What is Claimed is:

1. A method of modulating an intracellular signaling molecule in a cell, the method comprising contacting the cell with a modulator selected from the group of colostrinin, a constituent peptide thereof, an active analog thereof, and combinations thereof, under conditions effective to accomplish at least one of the following:

reduce 4HNE-protein adduct formation;

inhibit 4HNE-mediated glutathione depletion;

inhibit 4HNE-induced activation of p53 protein; or

inhibit 4HNE-induced activation of c-Jun NH2-terminal kinases.

2. The method of claim 1 wherein the cell is present in a cell culture, a tissue, an organ, or an organism.

3. The method of claim 1 wherein the cell is a mammalian cell.

4. The method of claim 3 wherein the cell is a human cell.

5. The method of claim 1 wherein the modulator is a constituent peptide of colostrinin.

6. The method of claim 5 wherein the modulator is selected from the group of MQPPPLP (SEQ ID NO:1), LQTPQPLLQVMMEPQGD (SEQ ID NO:2), DQPPDVEKPDLQPFQVQS (SEQ ID NO:3), LFFFLPVVNVLP (SEQ ID NO:4), DLEMPVLPVEPFPFV (SEQ ID NO:5), MPQNFYKLPQM (SEQ ID NO:6), VLEMKFPPPPQETVT (SEQ ID NO:7), LKPFPKLKVEVFPFP (SEQ ID NO:8), VVMEV (SEQ ID NO:9), SEQP (SEQ ID NO:10), DKE (SEQ ID NO:11), FPPPK (SEQ ID NO:12), DSQPPV (SEQ ID NO:13), DPPPPQS (SEQ ID NO:14), SEEMP (SEQ ID NO:15), KYKLQPE (SEQ ID NO:16), VLPPNVG (SEQ ID NO:17), VYPFTGPIPN (SEQ ID NO:18), SLPQNILPL (SEQ ID NO:19), TQTPVVVPPF (SEQ ID NO:20), LQPEIMGVPKVKETMVPK (SEQ ID NO:21), HKEMPFPKYPVEPFTESQ

(SEQ ID NO:22), SLTLTDVEKLHLPLPLVQ (SEQ ID NO:23), SWMHQPP (SEQ ID NO:24), QPLPPTVMFP (SEQ ID NO:25), PQSVLS (SEQ ID NO:26), LSQPKVLPVPQKAVPQRDMPIQ (SEQ ID NO:27), AFLLYQE (SEQ ID NO:28), RGPFPILV (SEQ ID NO:29), ATFNRYQDDHGEEILKSL (SEQ ID NO:30), VESYVPLFP (SEQ ID NO:31), FLLYQEPVLGPVR (SEQ ID NO:32), LNF (SEQ ID NO:33), and MHQPPQPLPPTVMFP (SEQ ID NO:34), and combinations thereof.

7. A method of down regulating 4HNE-mediated lipid peroxidation in a cell, the method comprising contacting the cell with a modulator selected from the group of colostrinin, a constituent peptide thereof, an active analog thereof, and combinations thereof, wherein:

the active analog is an active analog of a constituent peptide of colostrinin selected from the group of SEQ ID NO:1 through SEQ ID NO:34;

the active analog comprises a peptide having an amino acid sequence with at least about 15 percent proline and having at least about 70 percent structural similarity to one or more constituent peptides of colostrinin; and

the active analog does not interfere with cellular uptake of redox-sensitive 2',7'-dihydro-dichlorofluorescein-diacetate.

8. Use of a modulator selected from the group of colostrinin, a constituent peptide thereof, an active analog thereof, and combinations thereof in the manufacture of a medicament for:

reducing 4HNE-protein adduct formation;

inhibiting 4HNE-mediated glutathione depletion;

inhibiting 4HNE-induced activation of p53 protein; and/or

inhibiting 4HNE-induced activation of c-Jun NH2-terminal kinases.

9. Use of a modulator selected from the group of colostrinin, a constituent peptide thereof, an active analog thereof, and combinations thereof in the manufacture of a medicament for down regulating 4HNE-mediated lipid peroxidation, wherein the active analog does not interfere with cellular uptake of redox-sensitive 2',7'-dihydrodichlorofluorescein-diacetate.